



Newsletter for November 2022

FFF @ Midwest FurFest 2022

By Zennith | November 21, 2022

We're putting on a panel at Midwest FurFest! It will be Friday, December 2, at 3 pm Central time, in the Hyatt Midway conference room. Lathreas and I will be presenting. Lathreas, by the way, is one of our best scientists and I'm so excited they are flying all the way from Europe for this! [Here's a link to our event on Sched.](#)

We're aiming to outdo what we did at MFF 2021, which was already our best panel thus far! Throughout 2022, our research projects have absolutely been roaring (or at least, rawring/awooing/meowing/whichever), and we have a lot to show. We're also taking on a different presentation format this year. Rather than covering a lot of topics in shallow detail, we're focusing on the science.

We'll be starting with some basic biology, which will help you intuitively understand the

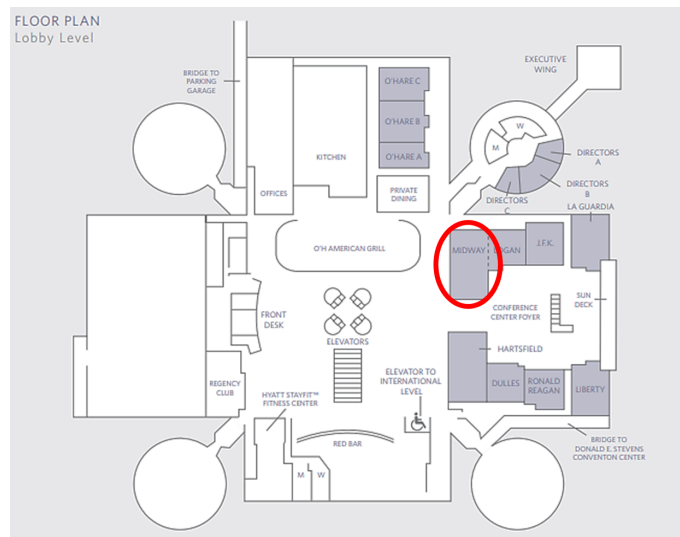
technical challenges of transformation. Even if you already have education or training in biotech or medicine, we aim for this part of the talk to be helpful for you.

Then, we'll talk about some state-of-the-art techniques available to bioengineers and doctors, including bioprinting, surgical techniques, and cell- and gene-based therapeutics. You've heard of Moderna, but there are a lot more tools and exciting frontiers in medicine that we expect to play a role in transformations.

Finally, we'll get to the piece de resistance: our game plan on making it possible to affirm your identity. We don't need to solve every problem, but there are a few key challenges we've identified and are already working on. We often talk about our research projects in isolation, on our website, and in this newsletter, whereas, at our talk at MFF, we'll be showing some of our research as part of an integrated whole, and how it builds off of existing state-of-the-art techniques.

Also, we want to see audience participation, and we'll leave plenty of time for questions!

Note that, unlike previous panels, our organization will not be recording the event. We've found that recordings are almost always distracting, and we want to focus exclusively on the people present in the room and make it a fantastic experience for them.



Exciting Times for the Integument Review and our First Wet Lab Project!

By Tilt | November 24, 2022

We are thrilled to say that we're on the home stretch for the Integument Review, which we aim to publish in January! After over a year and a half of research, we have succeeded in reviewing the current knowledge and methods in biotechnology that can be used for converting human skin into other integument types - namely, skin bearing fur, feathers, or scales. Over the course of our research, we have also developed a series of proposed experiments for making the jump from the current state of knowledge in the literature to actionable procedures that can be clinically performed.

Excitingly, one of these experiments, which we have previously described, is starting to fully take shape. This is the peptide array experiment to find peptides - small protein-like molecules - that can affect the thickness of hairs, an essential control knob for making realistic fur. Our experiment scans through the sequence of Wnt10b, a human protein known to affect hair thickness in mice through canonical Wnt signalling, and we will attempt to find peptide fragments that bind the matching receptors that are expressed in hair follicles - Frizzled-7, Frizzled-10, and Frizzled-1.

We have been in discussions with a contractor who will prepare the arrays of peptides for testing via a method called SPOT synthesis, in which different peptides are synthesized directly onto small circular spots in a grid on a cellulose membrane that can then be probed with purified Frizzled receptor proteins. Importantly, we found a way around one of the major technical hurdles, which was to find a synthesis strategy supporting peptides with double disulfide bridges and

O-palmitoylation, both of which likely being required for some of the peptides to bind their receptor.

In addition to testing Frizzled receptors for binding to the peptides, we'll also test full-length Wnt10b's ability to bind peptides derived from itself. This is based on an existing hypothesis in the research community that some peptide drugs, including one known Wnt-targeting drug called UM206, may act via a process called protein folding interdiction. The hypothesis is that a peptide derived from a protein can interfere with the correct folding of that protein by blocking places where it should normally interact with itself to stabilize the structure. By blocking correct folding, a peptide can effectively kill a protein's ability to function and act as an inhibitor, and we will determine if this happens for Wnt10b.

If and when we find candidate peptides that bind either Frizzled receptors or Wnt10b itself, we'll proceed to validate that interaction by other methods using protein-protein binding studies in vitro. Validated interacting peptides can then be tested in cells for their ability to alter Wnt pathway activity, and if we find one that works well, it can be tested for specific ability to alter hair follicle growth patterns.

Our hope is to receive all the reagents needed by the end of this year and conduct the experiment within the first month of the new year, and we will keep everyone posted as the experiment progresses! It's a very exciting time for FFF, as this marks our first proper wet lab experiment, hopefully the first of many. All of this research would not be possible without your help, and we are very grateful to all our donors and Patrons for your generous support to help us push the mission forward.

Here's to an exciting and research-filled 2023!

Welcoming Nalco to our Engineering Team

By Nalco | November 22, 2022



Hi! I'm Nalco! French toaster at your service, robotics and electronics engineer. I'm currently volunteering doing electronic engineering for the Enhanced Tail project. In my free time, I enjoy programming, building things, and making music.

I heard of the FFF as early as January of this year, and soon got really interested in FFF's projects, and now I'm really happy about being part of the Tail team.